



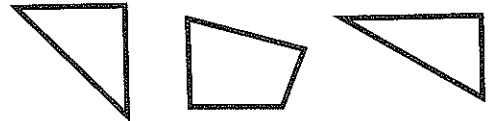
## Follow the Rules

Circle the shape that follows each set of rules.

**NOTE** Students practice identifying properties of polygons.

**SMH** 95-101

1. • It has 3 sides.  
• It has 1 right angle.  
• It has 2 sides the same length.



2. • It has exactly one pair of parallel sides.  
• No 2 of the angles are the same size.



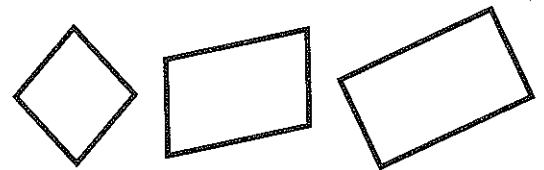
3. • It has fewer than 4 sides.  
• It has 1 obtuse angle.  
• It has 2 angles that are the same size.



4. • It has 5 sides.  
• It has 2 right angles.  
• It has exactly 1 pair of parallel sides.



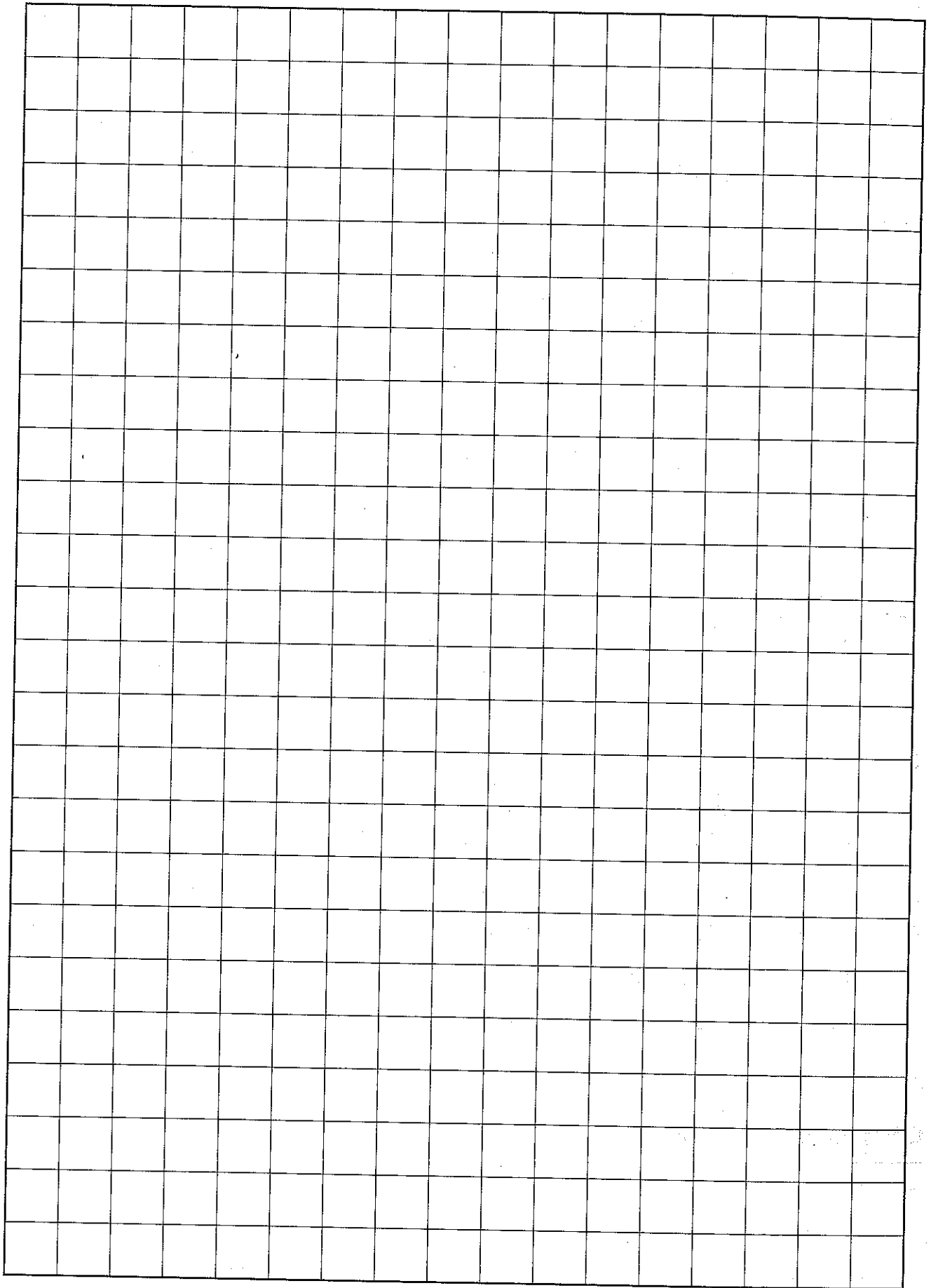
5. • It has exactly 2 pairs of parallel sides.  
• It has 0 right angles.  
• The sides are not all the same length.



## Ongoing Review

6. Crystal ran 9.6 miles each week. How many miles did she run in two weeks?

**A.** 4.8 mi      **B.** 18.12 mi      **C.** 18.2 mi      **D.** 19.2 mi

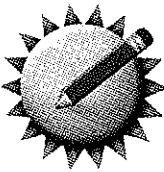


# Building a Sequence of Squares

1. Use square tiles to build squares of different sizes. Find the perimeter and area of each square. If you have enough time, make additional squares, and write their measurements in the blanks.

Dimensions of Square	Perimeter	Area
1 inch by 1 inch		
2 inches by 2 inches		
3 inches by 3 inches		
4 inches by 4 inches		
5 inches by 5 inches		
6 inches by 6 inches		
7 inches by 7 inches		

2. What patterns do you see? Make a list of observations about the squares, about their perimeters, or about their areas. Write your observations below. Use a separate sheet of paper if necessary.



# Area and Perimeter

## Fractions and Percents

**NOTE** Students solve fraction and percent problems involving perimeter and area.

**SMH** 40–41, 102

Solve the following problems. Show or explain how you determined your answers.

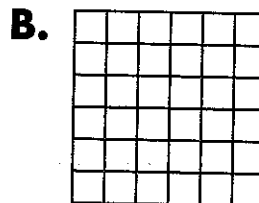
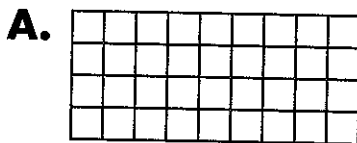
The students in Ms. Jackson's class built rectangles with color tiles.

1. Felix built a 4 inch by 8 inch rectangle.
  - a. What is the perimeter of Felix's rectangle? \_\_\_\_\_
  - b. The perimeter of Hana's rectangle is  $\frac{2}{3}$  as long as the perimeter of Felix's. What is the perimeter of Hana's rectangle? \_\_\_\_\_
  - c. What is the area of Felix's rectangle? \_\_\_\_\_
  - d. The area of Martin's rectangle is 25% of the area of Felix's. What is the area of Martin's rectangle? \_\_\_\_\_

## Ongoing Review

2. What do you notice about the area of the rectangles below?

Which rectangle has the longest perimeter?





# True or False?



**NOTE** Students compare fractions and percents of different numbers.

**SMH** 48–49, 50–51

Decide whether these statements are true or false. Circle TRUE or FALSE. Explain your reasoning.

Remember,  $>$  means greater than. Example:  $3 > 2$   
 $<$  means less than. Example:  $2 < 3$

1.  $\frac{3}{4}$  of 80  $>$   $\frac{2}{3}$  of 120

TRUE

FALSE

2.  $\frac{1}{4}$  of 36  $=$   $\frac{1}{2}$  of 18

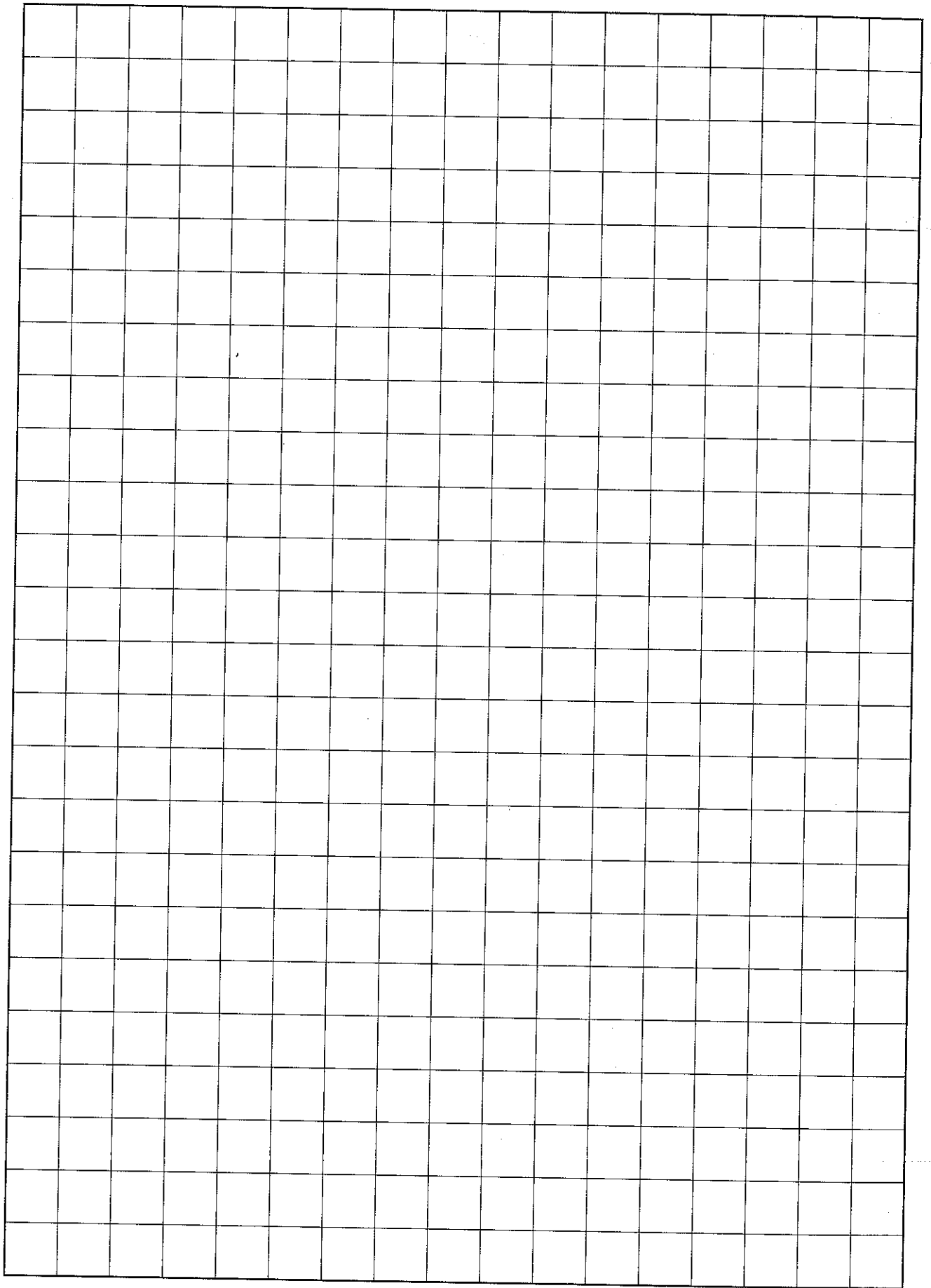
TRUE

FALSE

3. 75% of 200  $<$  75% of 260

TRUE

FALSE



# Doubling Squares (page 1 of 2)



Use your answers on page 27, *Building a Sequence of Squares*, to answer these questions about how the area of the squares changes.

Record the areas of the following squares:

1. Area of 2-inch square \_\_\_\_\_

Area of 4-inch square \_\_\_\_\_

2. Area of 3-inch square \_\_\_\_\_

Area of 6-inch square \_\_\_\_\_

3. When you double the sides of the square, how does the area of the larger square change?

4. Why does the area change in this way? Use drawings or other representations to show why this change occurs and explain your thinking.

## Doubling Squares (page 2 of 2)



Use your answers on page 27, *Building a Sequence of Squares*, to answer these questions about how the perimeter of the squares changes.

Record the perimeters of the following squares:

5. Perimeter of 2-inch square \_\_\_\_\_

Perimeter of 4-inch square \_\_\_\_\_

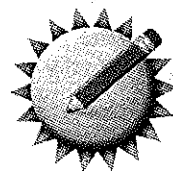
6. Perimeter of 3-inch square \_\_\_\_\_

Perimeter of 6-inch square \_\_\_\_\_

7. When you double the sides of the square, how does the perimeter of the larger square change?

8. Why does the perimeter change in this way?  
Use drawings or other representations to show why this change occurs and explain your thinking.





## Which Combination Is Greater?

Solve the following problems. Show how you determined your answers.

**NOTE** Students add fractions and compare sums to determine which combination is larger.

**SMH** 50–51, 52–53

1. Which is greater?

$$\frac{1}{2} + \frac{1}{6} \quad \text{or} \quad \frac{1}{4} + \frac{3}{8}$$

2. Which is greater?

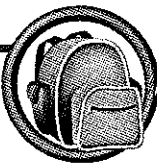
$$\frac{5}{6} + \frac{2}{3} \quad \text{or} \quad \frac{9}{10} + \frac{3}{5}$$

3. Which is greater?

$$\frac{3}{4} + \frac{1}{6} + \frac{1}{3} \quad \text{or} \quad \frac{5}{8} + \frac{1}{2} + \frac{1}{4}$$

4. Which is greater?

$$\frac{7}{12} + \frac{1}{12} + \frac{1}{6} \quad \text{or} \quad \frac{1}{8} + \frac{3}{4}$$



# Category Search

Some shapes fit many categories. For each shape, write the letters of every category to which it belongs.

**NOTE** Students classify triangles and quadrilaterals.

**SMH** 95, 96-98

## Categories

**A** square

**D** trapezoid

**G** equilateral triangle

**J** right triangle

**B** rectangle

**E** parallelogram

**H** isosceles triangle




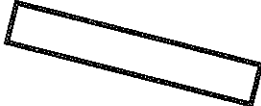



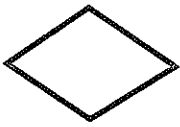

**K** obtuse triangle

**C** rhombus

**F** quadrilateral

**I** scalene triangle

**L** acute triangle

1.  _____	2.  _____	3.  _____
4.  _____	5.  _____	6.  _____
7.  _____	8.  _____	9.  _____

# A Sequence of Rectangles (page 1 of 2)



Build or draw the sequence of rectangles shown in the table below. Record the perimeter and area for each one.

Note that each increase refers to the original rectangle.

For example, you should build or draw shape 4 so that its sides are the sides of the original rectangle (3-inch x 4-inch) increased 4 times.

	Dimensions of Rectangle	Perimeter	Area
1. Original	3 inches x 4 inches		
2. All sides x 2			
3. All sides x 3			
4. All sides x 4			
5. All sides x 5			
6. All sides x 6			

7. Imagine a rectangle that has all sides x 10. Predict the following measurements.

Dimensions: \_\_\_\_\_

Perimeter: \_\_\_\_\_

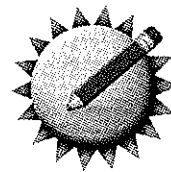
Area: \_\_\_\_\_

Explain your thinking.

## A Sequence of Rectangles (page 2 of 2)



8. Consider pairs of rectangles where the dimensions are doubled (rectangles with all sides  $\times 2$  and all sides  $\times 4$ , or those with all sides  $\times 3$  and all sides  $\times 6$ ). What happens to the perimeter when you double each of the dimensions of a rectangle?
  
  
  
  
  
  
  
  
  
  
9. Consider the same pairs of rectangles as above. What happens to the area?
  
  
  
  
  
  
  
  
  
  
10. Did perimeter and area of rectangles change in the same way it did for squares? Explain your thinking.



## In Between Problems

Alex and Shandra are working together to play a perfect game in which they place all of the cards. Write Alex's and Shandra's fractions in the blank cards in the game to show how they can all fit.

**NOTE** Students practice ordering fractions in a round of "In Between."

**SMH** 50-51, G10

Alex's cards:

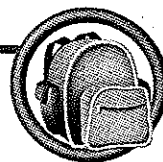
$\frac{3}{10}$	$\frac{1}{2}$	$\frac{7}{8}$	$\frac{9}{10}$	$\frac{1}{5}$
----------------	---------------	---------------	----------------	---------------

Shandra's cards:

$\frac{3}{4}$	$\frac{3}{5}$	$\frac{3}{8}$	$\frac{1}{8}$	$\frac{7}{10}$
---------------	---------------	---------------	---------------	----------------

Game:

10%					50%					90%

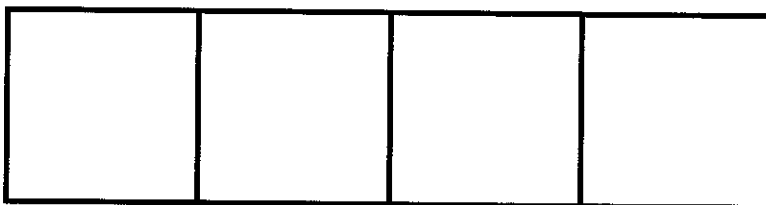


## Growing Rectangles

Record the dimensions, perimeter, and area of this rectangle in the table below. Draw rectangles with dimensions twice as long, three times as long, and so on, of the original rectangle. Record the perimeter and area of each one. (Each tile is a 1-inch square.)

**NOTE** Students find the perimeter and area of a sequence of related rectangles.

**SMH** 102



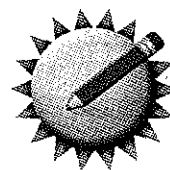
	Dimensions of Rectangle	Perimeter	Area
1. Original			
2. All sides x 2			
3. All sides x 3			
4. All sides x 4			
5. All sides x 5			

## Rearranging Rectangles

Begin with an 8 by 3 rectangle. Record its perimeter and area in the table below. Imagine cutting the rectangle in half and attaching the two pieces together to make a new rectangle. Record the dimensions, perimeter, and area of the new rectangle in the table below. Repeat this process two more times, and record the information in the table below.

Dimensions	Perimeter	Area
1. 8 inches by 3 inches		
2.		
3.		
4.		

- What is happening to the area of each rectangle? Why?
- What is happening to the perimeter of each rectangle? Why?
- What do you notice about how the shape of the rectangle changes?



## More Area and Perimeter Problems

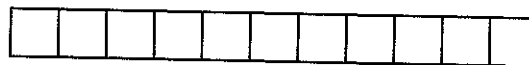
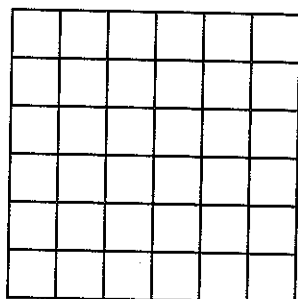
Solve the following problems. Show or explain how you determined your answers.

**NOTE** Students solve fraction and percent problems involving perimeter and area.

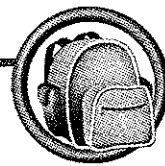
**SMH** 40–41, 102

1. Janet built a 5-inch by 7-inch rectangle.
  - a. What is the perimeter of Janet's rectangle? \_\_\_\_\_
  - b. The perimeter of Olivia's rectangle is 150% as long as Janet's. What is the perimeter of Olivia's rectangle?  
\_\_\_\_\_
  - c. What is the area of Janet's rectangle? \_\_\_\_\_
  - d. The area of Walter's rectangle is  $\frac{6}{5}$  the area of Janet's. What is the area of Walter's rectangle?  
\_\_\_\_\_
2. What do you notice about the perimeters of the rectangles below?

Which rectangle has the largest area?







# Perimeter Fractions and Percents

**NOTE** Students solve fraction and percent problems involving perimeter.

**SMH** 40–41, 102

Solve the following problems. Explain how you determined your answers.

Mrs. Ahmad's fifth-grade students measured the perimeter of some rooms and objects in their school.

1. The perimeter of their classroom is 120 feet. The perimeter of the nurse's office is  $\frac{3}{4}$  the perimeter of their classroom.

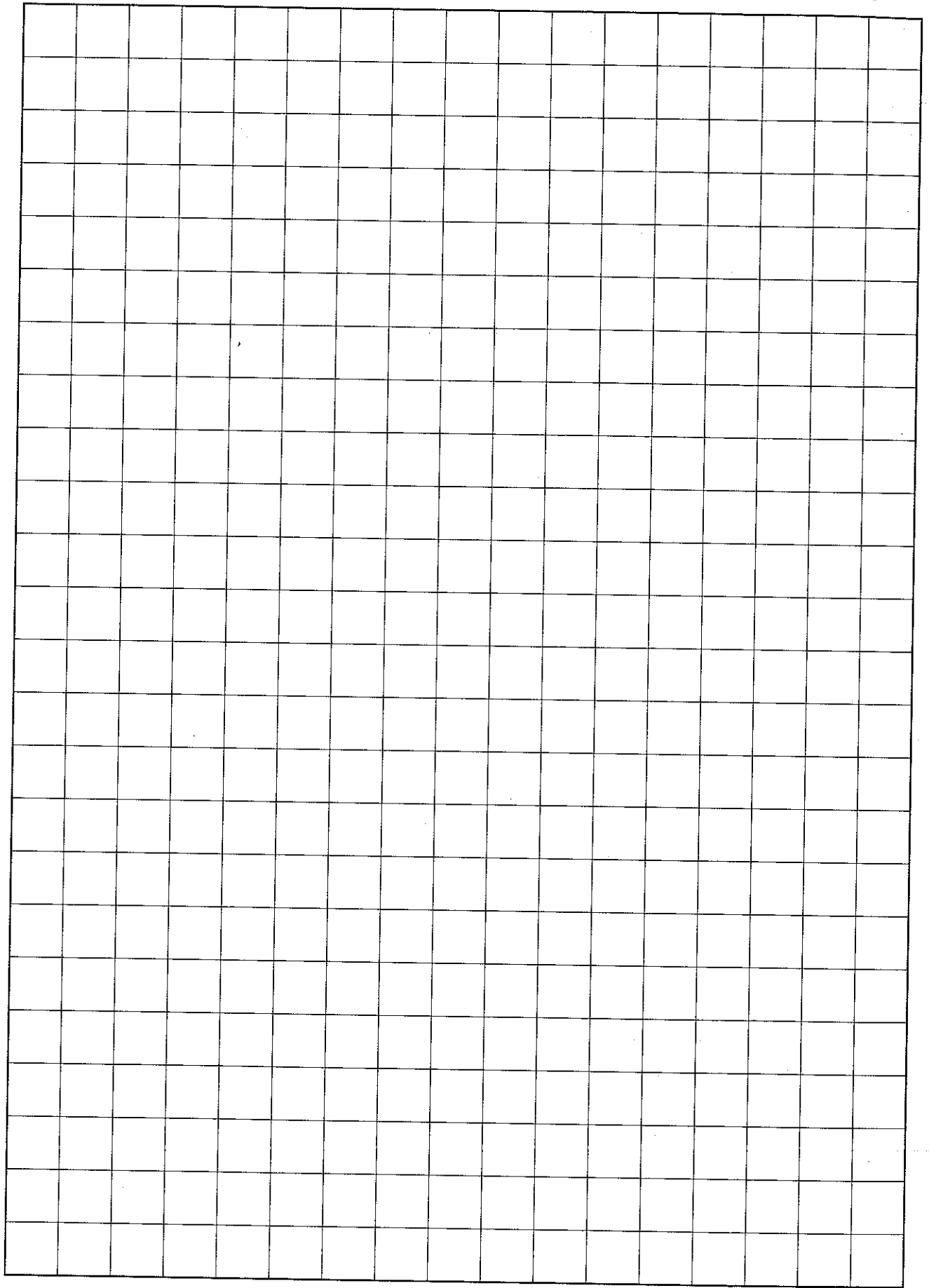
What is the perimeter of the nurse's office? \_\_\_\_\_

2. The perimeter of the rug in their classroom is 38 feet. The perimeter of the classroom door is 50% of that.

What is the perimeter of the classroom door? \_\_\_\_\_

3. The perimeter of the office bulletin board is 24 feet. The perimeter of the sandbox in the preschool playground is  $1\frac{1}{2}$  times as long.

What is the perimeter of the sandbox? \_\_\_\_\_



## Fencing a Garden

Ms. Lights' fifth-grade class will plant a garden in the school yard. The garden must be a rectangle, and the principal has given them 30 feet of fencing. Each side of the rectangle has to be a whole number.

Use grid paper, color tiles, or drawings to design at least 4 garden plots that would be enclosed by 30 feet of fence. Find the area for each garden plot.

Attach drawings of your rectangular gardens to this sheet. After you have designed at least four, fill out the table and answer the questions.

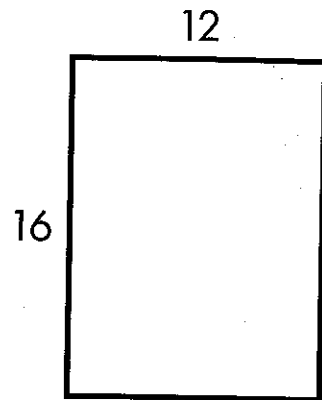
Dimensions	Perimeter	Area
1.	30 feet	
2.	30 feet	
3.	30 feet	
4.	30 feet	
5.	30 feet	
6.	30 feet	
7.	30 feet	

- What are the dimensions of the rectangle with the largest area?
- What are the dimensions of the rectangle with the smallest area?
- What do you notice about the shape of these rectangles?

## Rearranging a 16 by 12 Rectangle

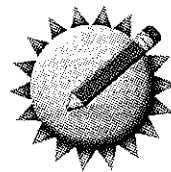
Here is a 16-inch by 12-inch rectangle:

Record its perimeter and area in the table below.  
Imagine cutting the rectangle in half, and attaching the two pieces together to make a new rectangle.  
Record the dimensions, perimeter, and area of the new rectangle in the table below. Do the same process at least three more times, and record the information in the table below.



Dimensions	Perimeter	Area
1. 16 inches by 12 inches		
2.		
3.		
4.		
5.		

- What is happening to the area of each rectangle? Why?
- What is happening to the perimeter of each rectangle? Why?
- What do you notice about how the shape of the rectangle changes?



## Garden Dimensions

Solve the following problems. Show or explain how you determined your answers.

Alicia, Charles, and Yumiko all planted gardens using 36 feet of fencing for the perimeter.

1. The area of Alicia's garden is 81 square feet. What are the dimensions of her garden?
2. The area of Charles's garden is 45 square feet. What are the dimensions of his garden?
3. The area of Yumiko's garden is 72 square feet. What are the dimensions of her garden?

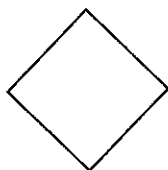
**NOTE** Students determine the dimensions of gardens when given the area and the perimeter.

SMH 102

## Ongoing Review

4. Which of the following figures is **not** a regular polygon?

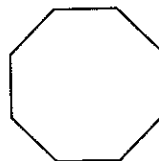
A.



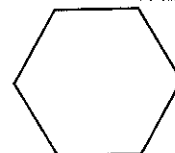
B.

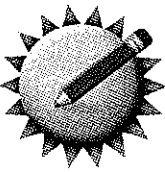


C.



D.



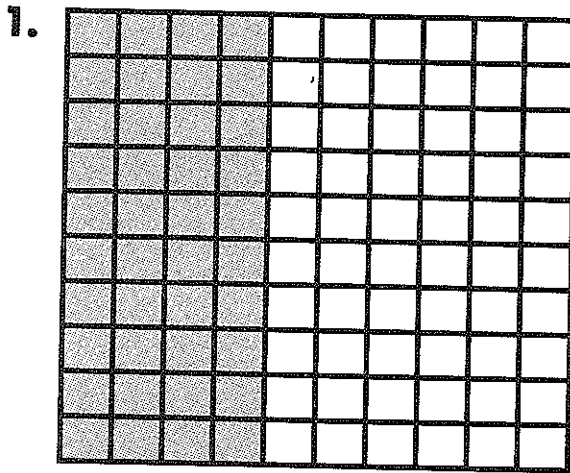


# Name the Shaded Portion

Below each 10 x 10 grid, fill in the amount shaded. Write the percent and some equivalent fractions.

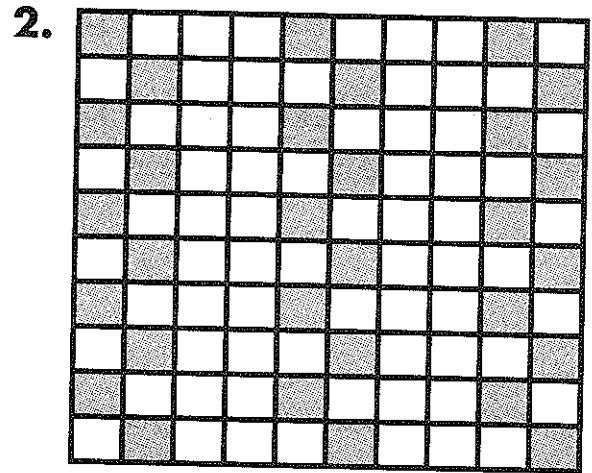
**NOTE** Students use 10 x 10 grids as a model to find fraction and percent equivalents.

SMH 47



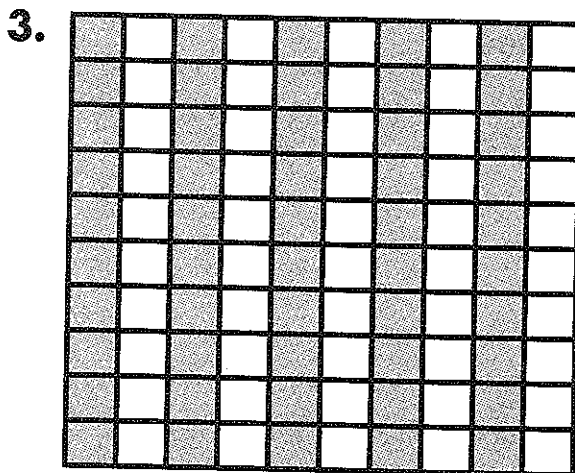
Percent:

Fractions:



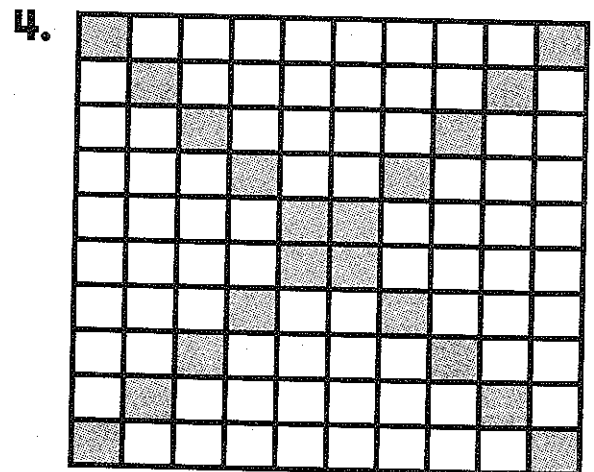
Percent:

Fractions:



Percent:

Fractions:



Percent:

Fractions:

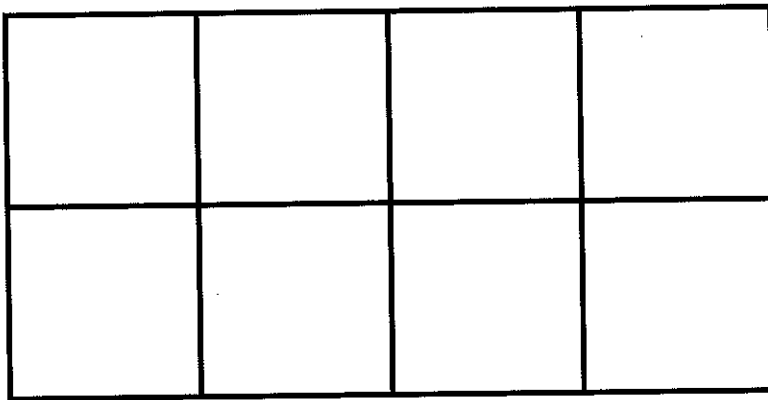


## More Growing Rectangles

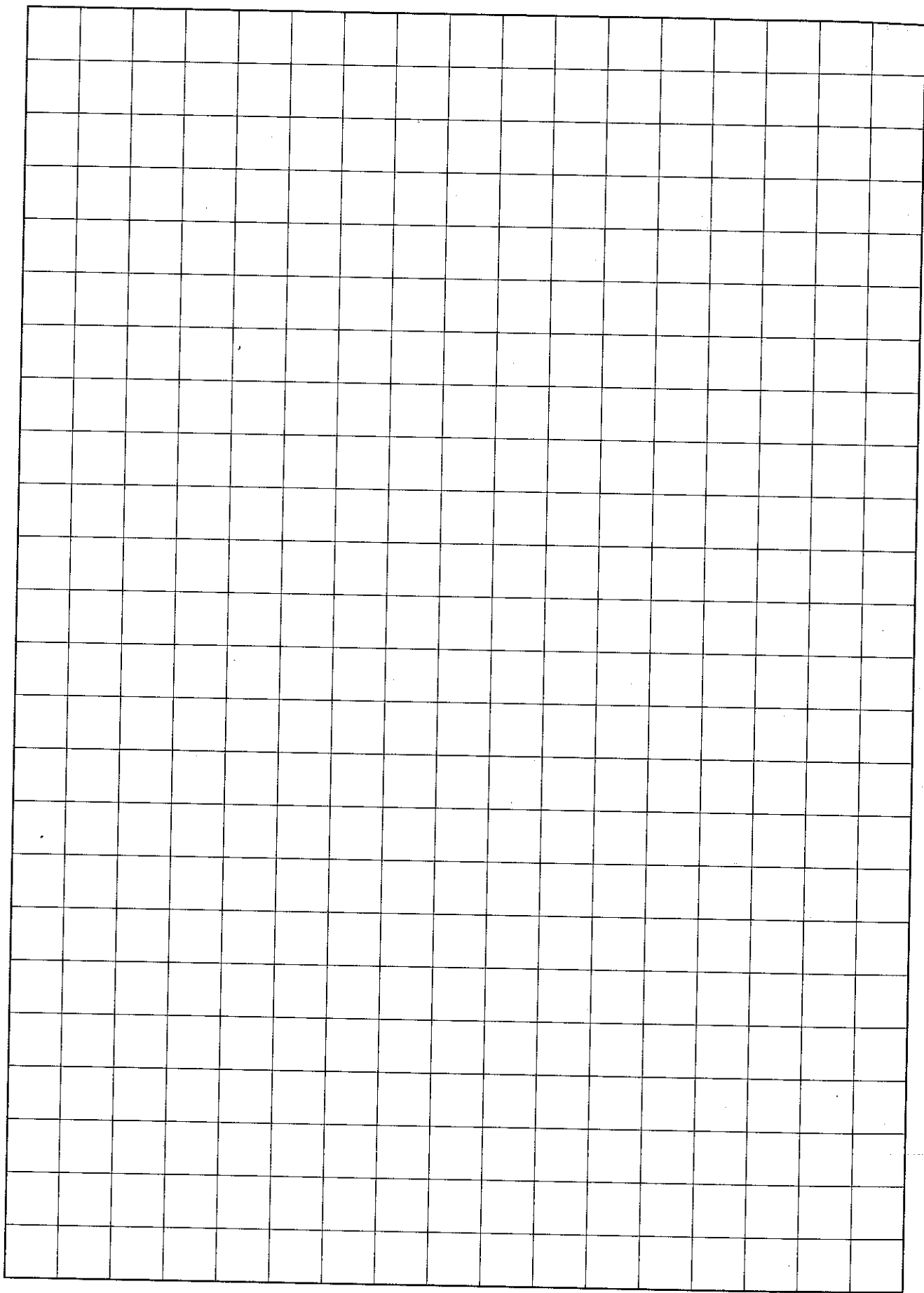
Record the dimensions, perimeter, and area of this rectangle in the table below. Draw rectangles with dimensions twice as long, three times as long (and so on) of the original rectangle. Record the perimeter and area of each one. (Each tile is a 1-inch square.)

**NOTE** Students find the perimeter and area of a sequence of related rectangles.

**SMH** 102



	Dimensions of Rectangle	Perimeter	Area
1. Original			
2. All sides x 2			
3. All sides x 3			
4. All sides x 4			
5. All sides x 5			





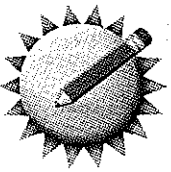
# Building Similar Polygons

For each of the Power Polygons shown below, build or draw polygons that are similar. Make the second one with sides two times as long, the third with sides three times as long, the fourth with sides four times as long, and so on.

Polygon	Original	Number of Pieces in Similar (Larger) Shapes			
		2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>
1. square B					
2. rectangle C					
3. triangle N					
4. triangle J					
5. rhombus M					
6. parallelogram O					

7. Predict how many pieces will be needed for the tenth figure for square B. Explain your thinking.

8. Predict how many pieces will be needed for the tenth figure for triangle N. Explain your thinking.

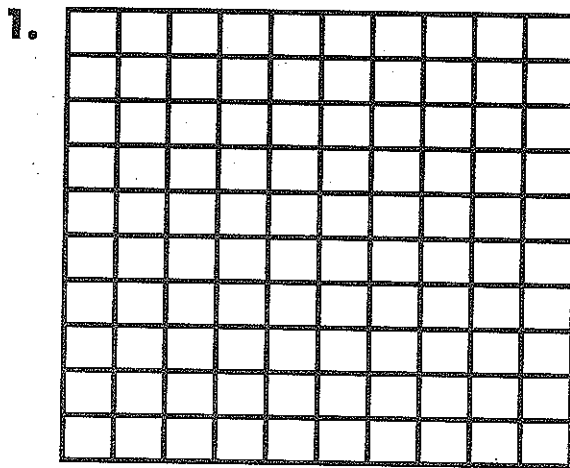


## Seeing Fraction and Percent Equivalents

For each 10 x 10 grid below, shade the portion that represents the given fraction or percent. Write any fraction and percent equivalents.

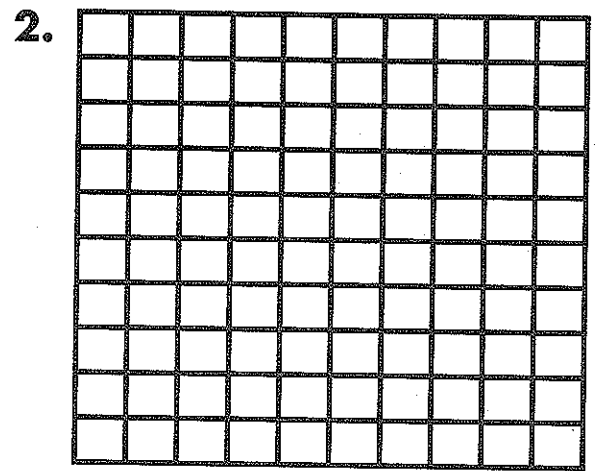
**NOTE** Students use 10 x 10 grids as a model to find fraction and percent equivalents.

SMH 47



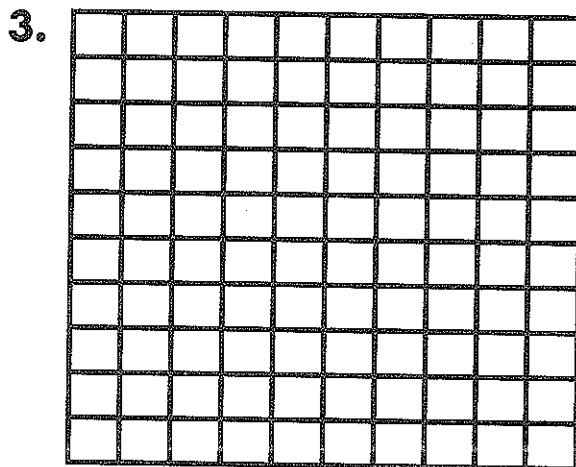
Percent: 25%

Fractions:



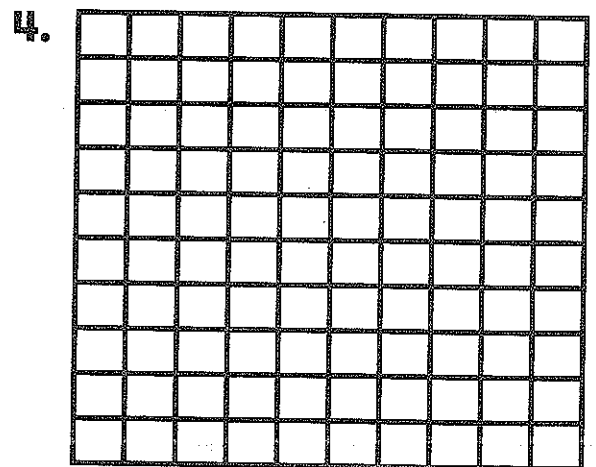
Percent: 30%

Fractions:



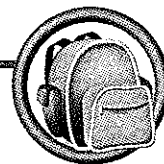
Percent:

Fractions:  $\frac{4}{5}$



Percent:

Fractions:  $\frac{2}{3}$



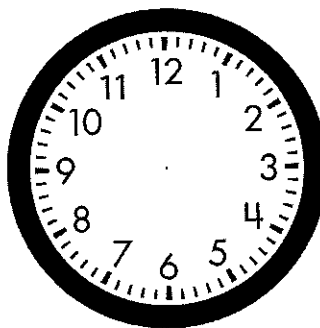
## Fractions That Add Up to One

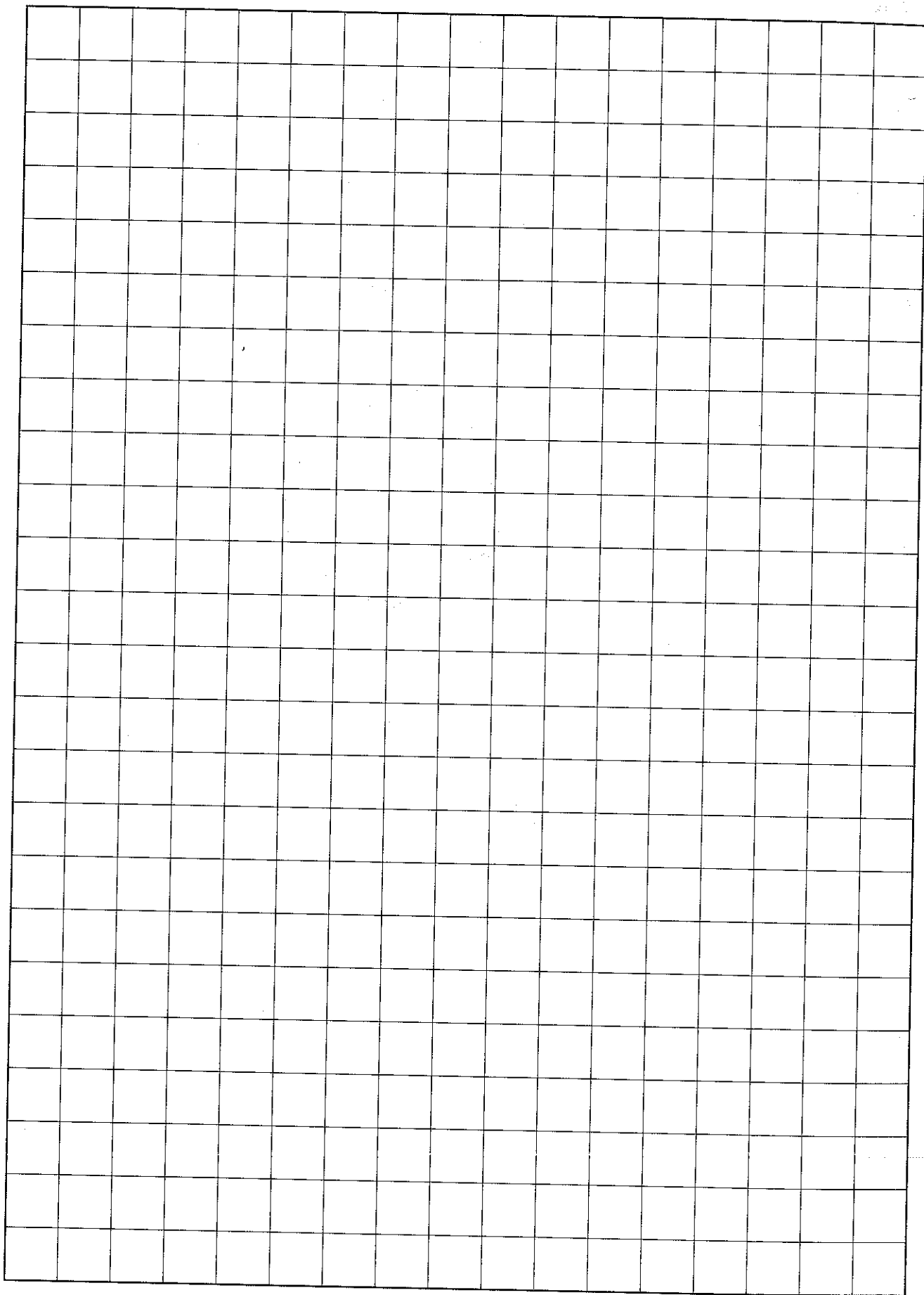
Use the clock face to add fractions. Draw a circle around sets of fractions that add up to 1. Use only fractions that are next to each other in a column or row. Some fractions will be used more than once. An example has been done for you.

**NOTE** Students use fractions on a clock face to add fractions.

**SMH** 52-53

$\frac{7}{12}$	$\frac{1}{12}$	$\frac{1}{3}$
$\frac{9}{12}$	$\frac{1}{4}$	$\frac{5}{6}$
$\frac{1}{6}$	$\frac{2}{3}$	$\frac{2}{12}$





## Building Similar Hexagons (page 1 of 2)

1. Draw hexagon H, and then build and draw the second figure, a similar hexagon with each side two times as long as hexagon H. Build the third figure, a similar hexagon with each side three times as long as hexagon H, and draw it on a separate sheet of paper. (For some figures you will need Power Polygon pieces other than H.)

First figure of hexagon H

Second figure of hexagon H

# Building Similar Hexagons (page 2 of 2)



2. Look at each hexagon, and record how many of each Power Polygon piece you used to make the second and third hexagon figures:

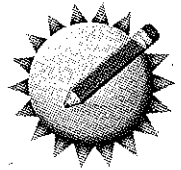
Second hexagon figure:

Third hexagon figure:

Piece	Number Used
triangle N	
rhombus M	
trapezoid K	
hexagon H	

Piece	Number Used
triangle N	
rhombus M	
trapezoid K	
hexagon H	

3. If the unit of area for each of these similar hexagons is Power Polygon hexagon H, what is the area, in hexagons, of the second figure? Explain how you found your answer.
4. What is the area, in hexagons, of the third figure? Explain how you found your answer.

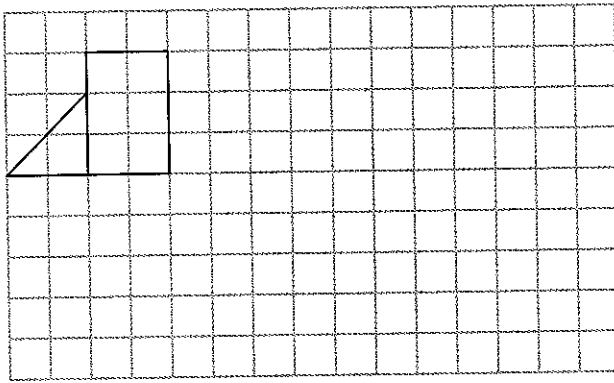


# Similar Shapes on Grids

**NOTE** Students draw similar shapes on grids with sides two times and three times as long as the sides of the original shapes.

**SMH** 103-104

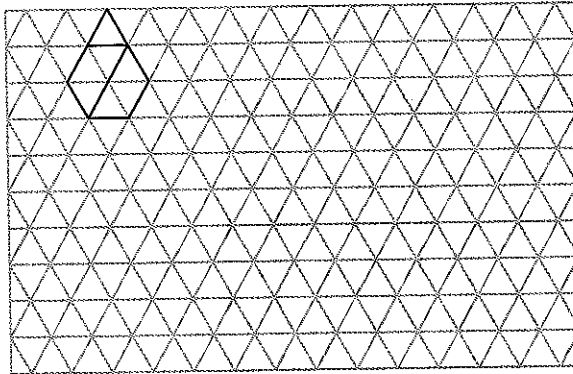
1. Use the grid to draw a similar shape with sides that are two times as long. Find the area of both shapes.



Area of original: \_\_\_\_\_

Area of new shape: \_\_\_\_\_

2. Use the grid to draw a similar shape with sides that are three times as long. Count the triangles to find the area of both shapes.



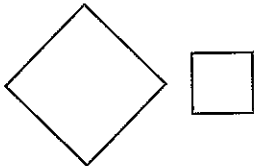
Area of original: \_\_\_\_\_

Area of new shape: \_\_\_\_\_

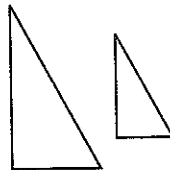
## Ongoing Review

3. Which polygon pair is **not** similar?

A.



B.



C.





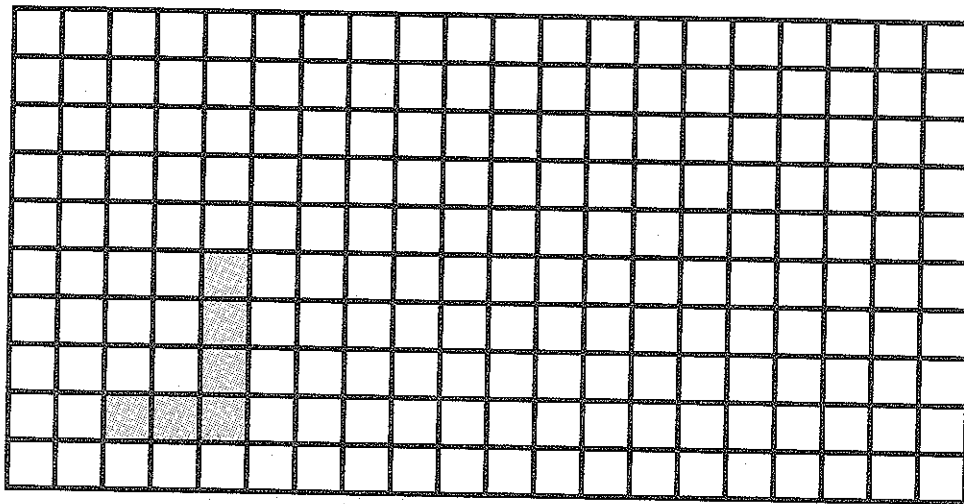
## Drawing Similar Shapes

Use the grids for your drawings.  
Find the area of each shape.

**NOTE** Students first draw similar shapes with sides that are 2 or 3 times as long as the sides of the original shape, and then find the perimeter and area of each shape.

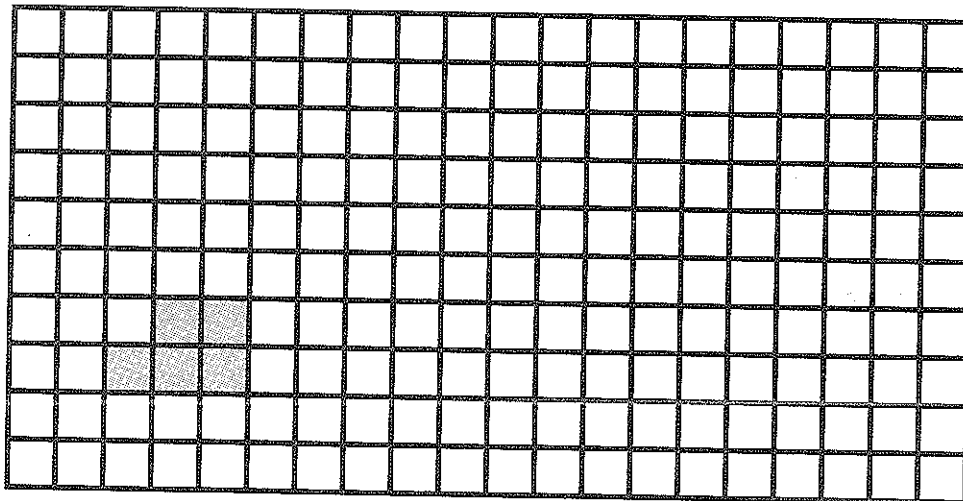
**SMH** 102, 103–104

1. Draw a similar shape with each side that is 2 times as long.



Area of original: \_\_\_\_\_ Area of new shape: \_\_\_\_\_

2. Draw a similar shape with each side that is 3 times as long.



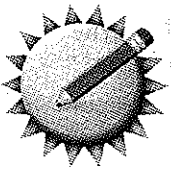
Area of original: \_\_\_\_\_ Area of new shape: \_\_\_\_\_



## Making a Similarity Poster

Work with a partner for this activity. Use 2–6 of the Power Polygon pieces to build a polygon. Make sure it is not the same size as one of the Power Polygons.

1. Use additional Power Polygons to build figures that are similar to the figure you made. Make one with each side twice as long and one with each side three times as long. Draw each of these figures (the original, the second figure, and the third figure) on a poster.
2. How do the areas of the larger figures compare with the area of your original figure? Use markers or colored pencils to explain your ideas about area on your poster.
3. How do the perimeters of the larger figures compare with the perimeter of your original figure? Use markers or colored pencils to explain your ideas about perimeter on your poster.



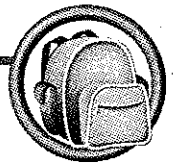
## School Days

Solve the following problems. Explain how you determined your answers.

**NOTE** Students solve problems about fractions and percents of a group.

**SMH** 40–41

1. A class has 24 students.
  - a. 50% went to the library. How many students went to the library?
  - b. At the same time, 8 of the students helped with the canned food drive. What percent helped with the food drive?
  - c. The rest of the students stayed in the classroom to finish their work. What fraction of students stayed in the classroom? What percent is that?
2. Another class has 30 students.
  - a. 15 went to the computer lab yesterday. What percent went to the computer lab?
  - b. At the same time, 3 out of the 30 students helped in the first grade class. What percent helped in the first grade?
  - c. 6 out of the 30 students worked at the writing center. What percent worked at the writing center?
  - d. The rest of the students were absent. How many students were absent? What percent of students were absent?



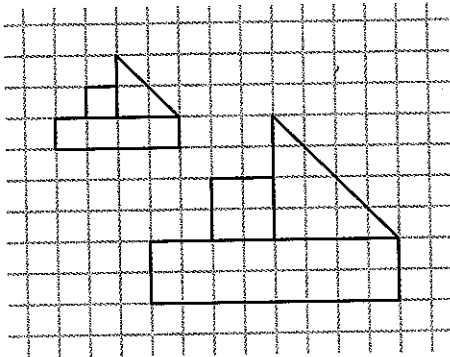
# Area Patterns

Count small squares or small triangles to find the areas.

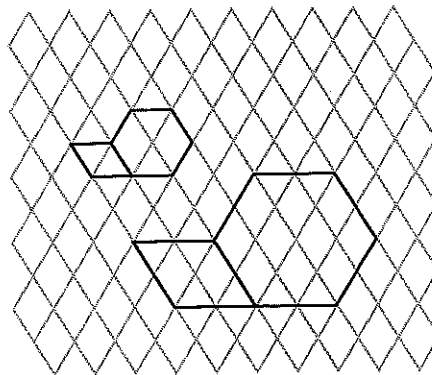
**NOTE** Students find the area of pairs of similar shapes in which one shape has sides twice as long as the other.

**SMH** 102, 103–104

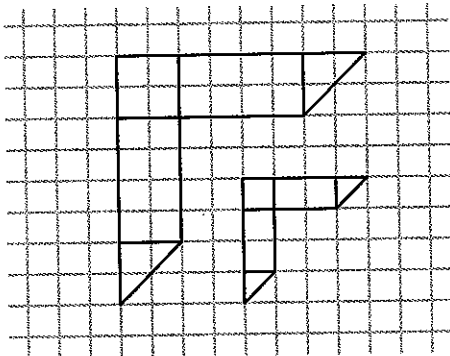
1.



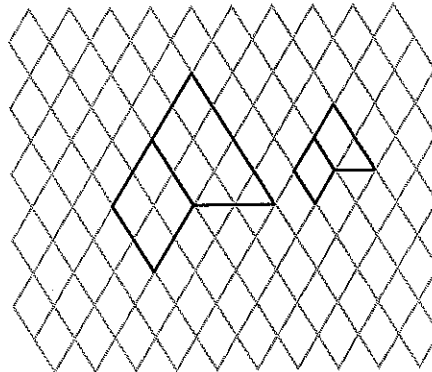
2.



3.



4.



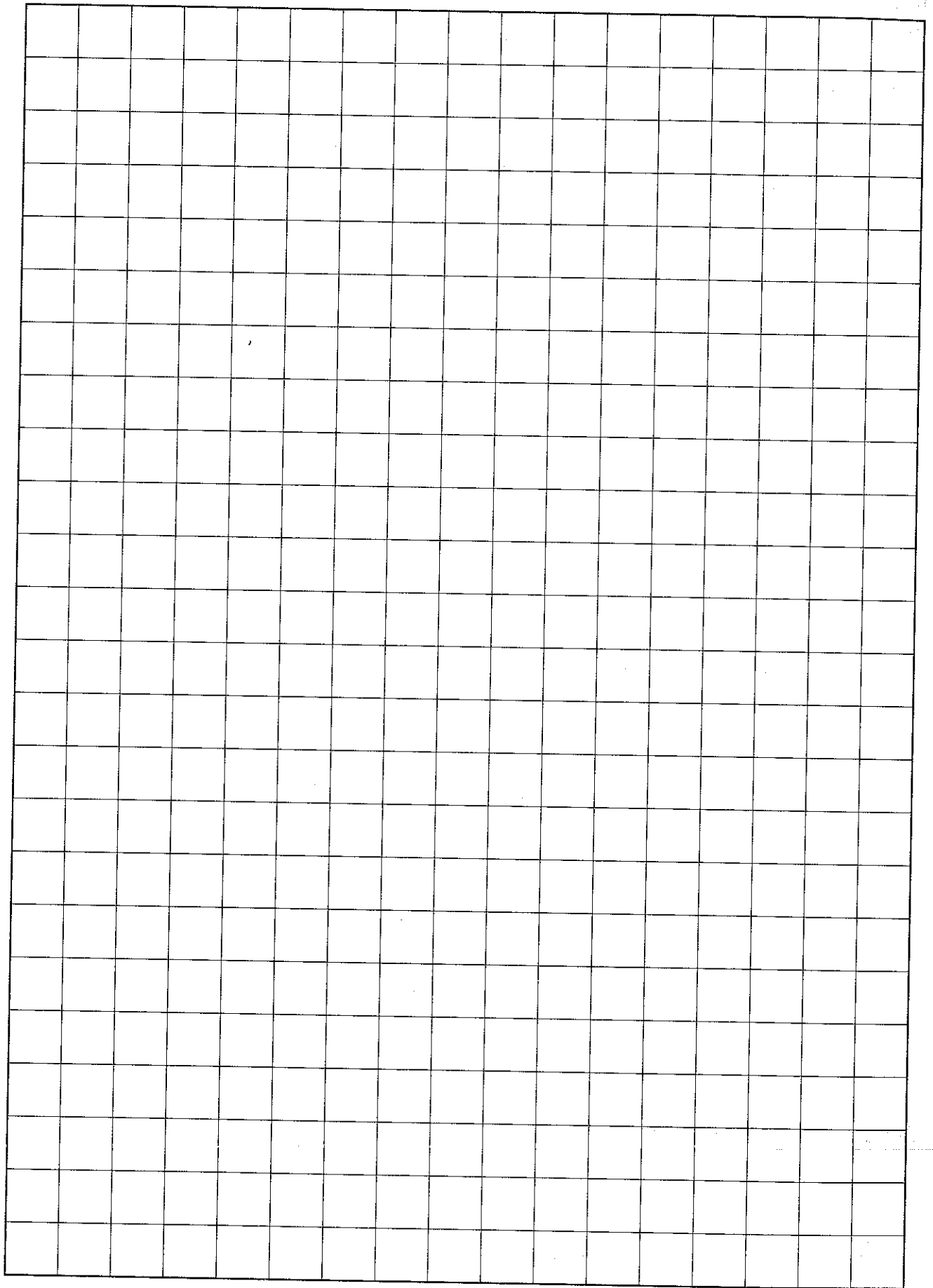
5. In a pair of similar polygons, the polygon with sides that are two times as long as the other has an area that is \_\_\_\_\_ times as large.

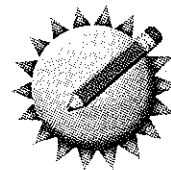
## Ongoing Review

6. Complete this equation:  $\frac{1}{2} + \frac{1}{6} =$  \_\_\_\_\_

A. 1

B.  $\frac{2}{3}$ C.  $\frac{1}{3}$ D.  $\frac{3}{12}$





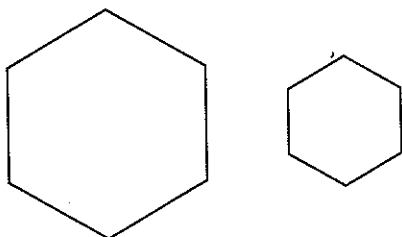
# Polygon Pairs

Look at each pair of polygons. Are the polygons in each pair similar or not similar? Explain why you think so.

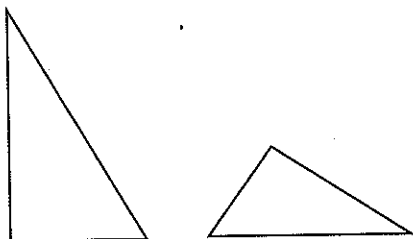
**NOTE** Students determine whether pairs of polygons are similar or not similar and explain their reasoning.

**SMH** 103-104

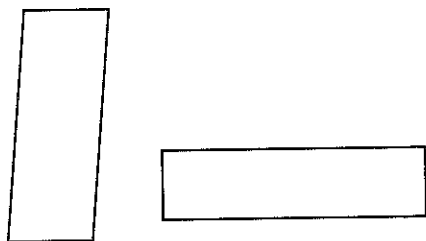
1.



2.



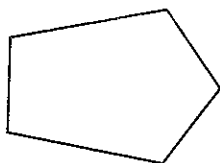
3.



## Ongoing Review

4. Which shape is **not** a pentagon?

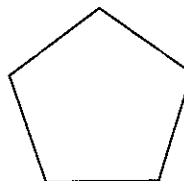
A.



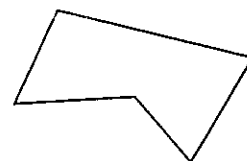
B.

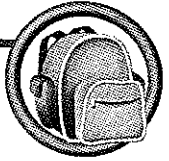


C.



D.





## Fraction Problems

Solve these problems, and show or explain how you solved them.

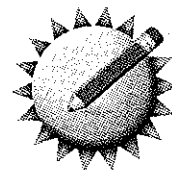
**NOTE** Students practice adding and subtracting fractions.

**SMH** 52-53

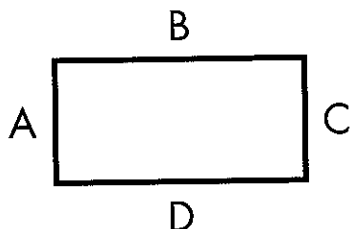
1. Mercedes and Zachary made two pans of cornbread. They gave  $\frac{3}{4}$  of a pan to their grandmother. Their family ate  $\frac{2}{3}$  of a pan for supper. How much cornbread was left?

2.  $\frac{5}{8} + \frac{1}{4} + \frac{3}{3} = \underline{\hspace{2cm}}$

3.  $4 - \frac{5}{6} = \underline{\hspace{2cm}}$



# Similar Polygons



**NOTE** Students determine dimension for polygons that are similar by creating a table, and then explain their reasoning.

**SMH** 103-104

Austin is choosing a pool for his backyard. He has found a design that he likes in the brochure. Austin wants a pool that is similar, but he will enlarge the dimensions to double the size of the pool he chose in the brochure.

1. Use the table to determine the dimensions of his pool. Each side of the pool is doubled. Write the new dimensions for each side in the table.

	Side A	Side B	Side C	Side D
Austin's Pool				
Brochure Pool	4 ft	8 ft	4 ft	8 ft

2. Draw a picture of Austin's pool. Label the dimensions of each side of the pool.
3. Explain why the two pools are similar.

